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Original Research Report

Prevalence, Perceived Risk Factors and Effects of Enuresis among School-age Children in Nsukka Local Government Area, Enugu State, Nigeria

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Abstract: This study investigated the prevalence, perceived risk factors and effects of enuresis among school-age children in Nsukka local government area. The study adopted a descriptive cross-sectional survey research design with a population of 7,794 Junior Secondary Students within the age range of 9-12years in the study area. Multi-stage sampling technique was employed to select a sample of 820 students from 10 selected schools. A structured questionnaire was the instrument for data collection. The reliability of the questionnaire was 0.86 Cronbach's alpha showing a good internal consistency of the test items. Data were analysed using frequencies, percentages means and standard deviations. Findings showed that prevalence of bedwetting among the respondents was 17.8%, 14.6% among males and 24.4% among females. The prevalence of primary bedwetting was 12.7%, 5.0% experienced secondary bedwetting, 15.0% experienced nocturnal enuresis and 2.6% experienced diurnal bedwetting. Dreaming of urinating, drinking a lot of fluid before bed and cold weather were some of the risk factors of bedwetting identified by the respondents. Some of the effects of bedwetting identified by the respondents were that bedwetting children often smell bad and bedwetting makes children feel sad. Preventive, curative, hygiene management and reinforcement strategies for enuresis were identified by the respondents. It was concluded that bedwetting negatively affects children in such ways as making them have an offensive smell, sad feelings, mockery and loss of respect from friends. School authorities should therefore make out time within the school year, to create awareness and teach school children about enuresis to reduce the stigma and embarrassment they face.

Keywords: Bedwetting, Enuresis, Prevalence, Risk factor, School-age children

1. Introduction

Enuresis has been a common childhood condition since ancient times. The term originated in 1790 and means "to urinate within" (Changizi Ashtiyani et al., 2013). Enuresis is a medical term used to describe bedwetting. When it occurs during night sleep, it is regarded as nocturnal enuresis, when it also occurs during daytime sleep, it is known as diurnal enuresis (Robson, 2009). According to Darling (2010), the most prevalent type is nocturnal enuresis, which is defined as an unintentional loss of urine during sleep in a child aged five years or older in the absence of congenital or acquired abnormalities of the neurological system or urinary tract. Bedwetting is more common in males in their early years, although it eventually equalizes between the sexes (Kanaheswari, 2003). Most children achieve all night dryness by the age of four or five, however 20% of five-year-olds are believed to have nocturnal enuresis (Changizi Ashtiyani et al., 2013).

Primary nocturnal enuresis and secondary nocturnal enuresis are the two forms of nocturnal enuresis (Sarabi et al., 2022). The one that is most common is primary nocturnal enuresis, which occurs in a child who has not been dry for at least six months since birth, whereas secondary nocturnal enuresis develops at least six months, if not several years, after a person has learnt to control the bladder (Rincon et al., 2023a). According to Changizi Ashtiyani et al. (2013), Secondary nocturnal enuresis affects 25% of children who are enuretic, and its prevalence rises with age in comparison to primary nocturnal enuresis. However, Pandey et al. (2019), noted that 90% of enuresis cases are primary, and its prevalence normally decreases with age.

The risk factors of enuresis are multifactorial. According to Cafasso (2019), large and heavy food intake before bedtime, excessive fluid intake before bedtime, and excessive cold or hot temperatures are some of the risk factors of bedwetting in children. In addition, younger age, male sex, black race, history of urinary tract infection, divorced parents, stress, parental education, deep sleep, and a family history of enuresis have all been identified as risk factors for enuresis in children (Gunes et al., 2009). Obesity has also been reported as a likely risk factor (Weintraub et al., 2013).

Nocturnal enuresis has been found to have psychological, emotional, physical and mental effects on children (Rincon et al., 2023b). It has become a significant issue impacting children and their families as a result of its negative impact on self-esteem, behavior, and the development of social skills, as well as the quality of life of those affected (Changizi Ashtiyani et al., 2013). Several qualitative studies identified the impacts of nocturnal enuresis on children's self-esteem and mental health status (Elbahnasawy & Elnagar, 2015; National Clinical Guideline Centre (UK), 2010). As a result, it is recommended that ongoing research into the occurrence and associated variables of enuresis in children be undertaken in order to improve timely intervention and treatment processes.

The second most frequent condition in children after allergic disorders is enuresis (Gür et al., 2004). Studies have estimated the global prevalence of enuresis to be around 20% in children aged 5 years and above (Kaneko, 2012). Further statistics by Bayne and Skoog (2014), stated that 15% of children will experience enuresis at 6 years of age, while 1% - 2% will experience it as adolescents. Abiodun and Oluwafemi (2017) found a 58.5% prevalence of enuresis among children ≥ 5 years old in southwestern Nigeria. Anyanwu et al. (2015) found a 37% prevalence among children 6 years old

and above, in Southeastern Nigeria, while Abdulkadir et al. (2019) reported an average of 37% among children in Nigeria. This implies that enuresis is common during the school-age period. Children of school age comprise a significant proportion of the global populace, with over 75% of them residing in developing nations (Edwards, 2015). According to the United Nations Children's Fund (UNICEF, 2022), a school-age child is between the ages of 6 and 12. School age is the active growing phase of childhood, a dynamic period of physical and mental development for the child. During the school years, the basis of a sound mind is laid. As a result, school age is a fundamental milestone in an individual's life and is responsible for many changes that occur later in life (UNICEF, 2022).

The rationale for this study lies in the fact that bedwetting, despite not being a serious medical issue, could be detrimental to children's socio-emotional development and general well-being. In line with sustainable development goal (SDG) number 3 and African Union Agenda number 3 both of which emphasize health and well-being, research on bedwetting in children is essential for identifying potential emotional challenges faced by children with enuresis and developing effective interventions. It can also provide insights into social interactions, family dynamics, and educational implications. Understanding how bedwetting affects children's school performance, attendance, and extracurricular activities can inform educators about necessary accommodations. Research on physical health and development can reveal long-term consequences, such as bladder health or sleep disturbances, which can guide medical interventions. The overall quality of life of the children could be affected, including their daily functioning, emotional well-being, and happiness. Findings from research can influence healthcare policies, management guidelines, and public awareness campaigns, advocating for resources and support services for affected children and their families.

1.1. Theoretical Framework

The theories of enuresis indicate that it is a multifactorial condition. This study is hinged on the biological and psychodynamic theories. The biological theory claims that the malfunctioning of certain physiological processes plays a role in bedwetting. The first theory is that bedwetting results from slow maturation of the part of the nervous system that controls bladder contraction (Colman, 2017). This theory indicates that children who bed-wet usually have overactive bladders which may further be characterized by urgent and too frequent need to urinate (Kiddoo, 2012). Robson (2024) further noted that in addition to an overactive bladder, a low functional bladder capacity (FBC) in children could affect urine retention. During sleep, the bladder gets filled up too quickly with only a small quantity of urine leading to uncontrollable urgency to urinate.

The second biological theory states that bedwetting can be linked to arousal disorder, in which the child is not able to wake up in response to a full bladder (Cederblad, 2015). Robson (2024) noted that children with sleep arousal disorder find it difficult to respond to auditory stimuli during sleep, hence bedwetting children are usually deep sleepers who are difficult to wake up. Another biological theory proposes that bedwetting results from the overproduction of urine beyond the bladder capacity of the child, such that the bladder is not able to hold the urine until morning (Van Herzeele & Vande Walle, 2016). This is attributed to a deficiency of the anti-diuretic hormone

(ADH) known as arginine vasopressin (Cederblad, 2015). ADH functions mostly at night to limit the quantity of urine produced during sleep. The ADH stimulates the kidney to reabsorb the water from the urine back into the bloodstream to reduce the urine volume so that a child can sleep till morning without urinating (Cuzzo et al., 2020). Hence the deficiency of ADH or irregularity in its function results in unrestrained urine production during sleep (Cederblad, 2015). These altered processes involving delayed central nervous system maturity which controls bladder function, genetic susceptibility, hormonal imbalances that alter urine production at night, and abnormal bladder capacity or function, work singly or in combination to cause enuresis in children.

The psychodynamic theory suggests that bedwetting can be seen as a manifestation of underlying emotional conflicts such as stressful life events, or anxiety (Robson, 2009). According to Eaker (2022), chronic stressors such as financial concerns, bullying, family relocation, divorce, or family death can raise stress levels and lead to sleep deprivation and bedwetting. Baird et al. (2014), also noted that family low socioeconomic status could contribute to childhood stress. Disruptions in a child's normal daily routine could also lead to bedwetting (Cleveland Clinic, 2023). The psychodynamic theory of bedwetting highlights the psychological aspects of the behaviour, seeing it as a complicated interaction between emotional reactions, developmental phases, and unconscious tensions.

1.2. Statement of Problem

Childhood enuresis affects both children and their families. It has been found to cause a variety of behavioural and psychological problems in children. In addition, aggressive behavior, low self-esteem, social isolation, and subpar academic achievement might result from bedwetting. Not only do kids with enuresis have poorer self-esteem than kids without the condition, but they also have worse self-esteem than kids with chronic, crippling illnesses (Virtual Medical Centre, 2012). Children who wet the bed run the risk of experiencing mental and physical abuse from classmates and relatives. Children who experience embarrassment from family members often attempt to conceal their feelings by lying and putting away their soiled clothes, which raises their chances of developing skin infections. Children who bedwet may also avoid certain age-appropriate activities like sleepovers, holiday stayovers, or camp events out of embarrassment and shame. Enuresis prevalence, risk factors, effects, and treatment techniques have all been examined in many parts of the world, including Nigeria. The conclusions of the studies, however, appear to vary depending on the age and location of the people tested. In some parts of Nigeria, there is still a dearth of information on this subject. The current study is intended to identify the risk factors and effects of enuresis in school-aged children in Nsukka L.G.A of Enugu state.

1.3. Purpose of the Study

The general purpose of this research is to determine the prevalence, perceived risk factors and effects of enuresis among school-age children in Nsukka local government area, Enugu State, Nigeria. Specific purposes are to:

(a) determine the prevalence and types of enuresis among school-age children in Nsukka LGA;

(b) ascertain the perceived risk factors of enuresis among school-age children; and

(c) identify the perceived effects of enuresis among school-aged children in Nsukka LGA.

1.4. Research Questions

The following research questions guided the study.

(a) What is the prevalence and types of enuresis among school-age children in Nsukka LGA?

(b) What are the perceived risk factors of enuresis among school-age children in Nsukka LGA?

(c) What are the perceived effects of enuresis among school-age children in Nsukka LGA?

2. Materials and Methods

2.1 Design for the study

For this study, a descriptive cross-sectional survey design was employed. This study design is regarded appropriate since it could investigate the current situation in a certain area (Uzoagulu, 2008).

2.1.1 Ethics Statement

An ethical approval was obtained from the Health Research and Ethics Committee, the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, Enugu State with the number NHREC/05/01/2008B-FWA0000245 8-1RB00002323. Written consent was obtained from the parents/guardians of the respondents after explaining to them the study protocol. Confidentiality of all the information collected was assured.

2.2 Area of the study

The study was carried out in Nsukka local government area, Enugu state, south-east, Nigeria. Nsukka LGA is home for some of the most recognised educational institutions in south-eastern Nigeria such as the University of Nigeria, Nsukka and other tertiary, secondary and primary educational institutions. According to data obtained from Post Primary School Management Board (PPSMB), Nsukka Zonal office (2022), there are 31 government secondary schools located in Nsukka local government area. These schools are attended by children with ages ranging from 8-18years and hence an ideal palce to find school-age children with ages 9-12years.

2.3 Population and Sample

The study population consisted of all the 7,794 Junior Secondary School children within the age range of 9-12 years in Nsukka LGA (PPSMB, Nsukka Zonal office, 2022). A multi-stage sampling technique was employed. In the first stage, the secondary schools in Nsukka L.G.A were divided into urban and rural clusters. Simple random sampling by balloting without replacement was used to select thirty per cent of the total number of secondary schools in each cluster. Thus**,** 4 schools out of the 12 schools from the urban cluster and 6 schools out of the 19 schools from the rural cluster were selected. This gave a total of 10 secondary schools. In the third stage, the formula recommended by WHO (2013) guidelines was used to calculate a sample size of 820 students. Lastly, proportionate random sampling was used to select the 820 respondents from the selected schools.

2.4. Instrument for Data Collection and Study Procedure

A structured questionnaire was used to obtain data from the respondents. This is because the respondents will be required to respond to questions only in the manner and extent desired by the

researchers. The questionnaire was divided into five parts. Part I elicited data on the socio-demographic features of the respondents (such as age, sex, residence, number of siblings, and child order). Part II contained items on the prevalence and types of enuresis. Part III elicited information on the perceived risk factors of enuresis among the respondents while Part IV identified the perceived effects of enuresis on the respondents. Parts III and IV of the questionnaire were rated on a 5-point Likert scale of Strongly Disagree = 1 to Strongly Agree = 5. Enuresis was defined as secondary if the child had attained full control over his bladder habits for a continuous period of at least six months. Primary enuresis was defined as bedwetting since early childhood without a substantial period of dryness (Akhavizadegan et al., 2019).

2.5. Data Collection Technique

Eight hundred and twenty copies of the questionnaire were hand-distributed with the aid of two research assistants. The completed questionnaires were collected immediately after filling. All the questionnaires were collected but 806 were correctly filled and this became the actual sample size.

2.6. Data Analysis Technique

The data from the questionnaire were coded and input into the Statistical Package for the Social Sciences (IBM-SPSS) version 23.0. Data from the research questions were analysed using frequencies, percentages means and standard deviations. The decision level for the mean score was 3.0. This implies that any item with mean 3.0 and above was accepted, while any item with mean less than 3.0 was rejected.

3. Results and Discussion

Table 1: Demographic characteristics of the respondents

Parameter	***Frequency***	***Percentage***
Gender		
Male	*560*	*69.5*
Female	*246*	*30.5*
Class		
JSS1	*229*	*28.5*
JSS2	*250*	*31.1*
JSS3	*327*	*40.3*
Mother's education		
No formal education	*81*	*10.2*
Primary school	*45*	*5.7*
Secondary school	*191*	*24.1*
Higher institution	*476*	*60.0*
Fathers' education		
No formal education	*83*	*10.4*
Primary school	*71*	*8.9*
Secondary school	*174*	*21.8*
Higher institution	*478*	*58.9*

Birth position		
Firstborn	*286*	*35.2*
Middle born	*425*	*53.0*
Last born	*95*	*11.8*
Known relatives who are/were bedwetters		
Nobody	*563*	*70.2*
At least one family member	*243*	*29.8*

JSS: junior secondary school. N = 806

3.1 Demographic characteristics of the respondents

According to table 1, the majority (69.5%) of the respondents were males while 30.5% of them were females. A greater proportion (40.3%) of them were in junior secondary class 3, with 60.0% of their mothers having a maximum of higher education. Data on fathers' education showed that more than half (58.9%) of them went to higher institutions. More than a quarter (29.8%) of them know at least a family member who is/was a bedwetter.

Table 2: Prevalence of enuresis among the respondents

Bedwetting status	***Frequency***	***Percentage***
Never bed wetted	*327*	*40.9*
Stopped bedwetting	*337*	*41.4*
Currently bedwetting	*142*	*17.8*
Bedwetting prevalence by gender		
Male bedwetters	*82*	*14.6*
Female bedwetters	*60*	*24.4*
Prevalence of bedwetting by types		
Primary bedwetting	*102*	*12.7*
Secondary bedwetting	*40*	*5.0*
Nocturnal bedwetting	*121*	*15.0*
Diurnal bedwetting	*21*	*2.6*

3.2 Prevalence and types of enuresis among the respondents

Table 2 shows the prevalence and types of enuresis among the respondents. From the table, the prevalence of bedwetting among the respondents was 17.8%. A good number (40.9%) of them never bed-wetted, 41.4% of them had stopped bedwetting and 17.8% were currently bedwetting. Data also showed that the prevalence of bewetting by gender was 14.6% among males and 24.4% among females. The prevalence of primary bedwetting was 12.7%, 5.0% was secondary bedwetting, 15.0% experienced nocturnal enuresis and 2.6% experienced diurnal bedwetting.

The finding of the study showed that the prevalence of bedwetting among the respondents was 17.8%. Though the prevalence of bedwetting was higher (24.4%) among girls than boys (14.6%), there were more (57.7%) males than girls (42.3%) among the children who bedwet. Mahmoodzadeh et al. (2013) found a higher prevalence of nocturnal enuresis and a lower prevalence of diurnal enuresis among boys than girls. De Sousa et al. (2007) also reported that enuresis was more common among boys than girls. The achievement of nocturnal bladder control is a crucial developmental milestone in children, and on average, males experience more developmental delays than girls due to sex variations

in brain development rates (Sullivan et al., 2015). In line with previous studies, primary bedwetting was more prevalent (12.7%) than secondary enuresis (5.0%). This is supported by a study conducted by (Nuru Hassen et al., 2021) who found a 91.3% prevalence of primary bedwetting and 8.7% for secondary enuresis from a total of 230 enuretic children in Ethiopia. Another study in Port Harcourt, Nigeria also found a high percentage of children with primary bedwetting and few with secondary bedwetting (Paul et al., 2011). The majority of those who bed wet experienced nocturnal (nighttime) bedwetting and a few had diurnal (night and daytime) bedwetting. This finding is in line with previous studies by De Sousa et al. (2007) and Mahmoodzadeh et al. (2013) who reported that nocturnal bedwetting was more common than diurnal bedwetting in children. A study by Iduoriyekemwen et al. (2006) in the Ehor community, Edo state, reported a high prevalence (91%) of nocturnal bedwetting and 9.4% cases of diurnal bedwetting. Many of the children knew relatives who had/had the problem of enuresis. von Gontard et al. (2001) reported that genetic traits are one of the important factors in childhood bedwetting, although somatic and psychological environmental variables are also associated with the problem.

Table 3: Perceived risk factors of enuresis among children

Risk factors	***Mean***	***Standard deviation***	***Remarks***
Dreaming of urinating	*4.98*	*1.14*	*Agreed*
Drinking a lot of water/fluid before going to bed	*4.85*	*1.09*	*Agreed*
Eating a lot of fruits before going to bed	*3.94*	*1.24*	*Agreed*
Cold weather	*3.82*	*1.30*	*Agreed*
Sickness and taking medicines	*3.52*	*1.20*	*Agreed*
If the toilet is far from the bedroom.	*3.51*	*1.21*	*Agreed*
Laziness to go to the toilet to urinate.	*3.38*	*1.20*	*Agreed*
Fear of going to the toilet alone at night.	*3.44*	*1.39*	*Agreed*
Deep sleep	*3.26*	*1.22*	*Agreed*
Bladder infection	*3.25*	*1.25*	*Agreed*
Nobody wakes the child up at night to urinate.	*3.10*	*1.07*	*Agreed*
When the child is not happy	*2.76*	*1.17*	*Disagreed*
Heavy snoring during sleep (sleep disorder)	*2.42*	*1.19*	*Disagreed*
Playing a lot before going to bed	*2.35*	*2.09*	*Disagreed*
Eating heavy food before going to bed	*2.20*	*1.24*	*Disagreed*
Eating late at night	*2.15*	*1.45*	*Disagreed*

3.3 Perceived risk factors of enuresis among children

Table 3 shows the mean and standard deviation of the perceived risk factors of enuresis among children. From the data, the respondents agreed that dreaming of urinating (4.9±1.14), drinking a lot of water/fluid before going to bed (4.85±1.09), eating a lot of fruits before going to bed (3.94±1.24), cold weather (3.82±1.30) and sickness/taking medicines (3.52±1.20) were some of the risk factors of bedwetting. The respondents disagreed that when a child is not happy (2.76±1.17), snoring during sleep (2.42±1.19), eating heavy food before going to bed (2.20±1.24) and playing a lot before going to bed (2.35±2.09) were not factors.

The finding of this study shows that the perceived risk factors of bedwetting include dreaming of urinating, drinking a lot of water/fluid before going to bed, eating a lot of fruits before going to bed, cold weather and sickness/taking medicines, laziness and fear to use the bathroom at night, deep sleep, bladder infection, and lack of assistance to wake the child up were perceived as risk factors for bedwetting. While some of these risk factors are of clinical relevance, the rest have not been empirically associated with enuresis and perceiving them as risk factors could be due to inadequate information. For instance, the Urology Care Foundation (2022) noted that certain medications, bladder infection or irritation, illness and stress as well as inappropriate fluid intake (drinking less during the day and more in the evenings) could increase bedwetting in children, however, they note that bedwetting is not as a result of laziness in children. Barry (2022) also noted that cold weather and much fluid intake at night could increase the risk of bedwetting in children. However, as generally believed that bedwetting episodes usually follow dreaming of bedwetting, von Gontard (2012) noted that dreaming is not associated with dreaming and an old laboratory study found that patients dreamt of bedwetting only after they had bed wet (Pierce, 1963). The study reported by Pierce concluded that the dreams could be a psychological response to the feeling of wetness during sleep. The respondents in this study did not believe that bedwetting could be associated with unhappy moods, sleep disorders, heavy food intake before going to bed, and too much play before going to bed. This finding suggests that the respondents are not aware of the biological and psychological dimensions of bedwetting. This finding is not out of place given that the respondents are children. It could also indicate that the children have not received adequate education about the causes of bedwetting. Huang et al. ((2020) found that sleep disorder was one of the risk factors for bedwetting, Kaslow (2008) also observed that prolonged unhappiness can lead to bedwetting and Anyanwu et al. (2015b) found that heavy food consumption before going to sleep was associated with bedwetting.

Table 4: Perceived effects of bedwetting on children

Perceived effects	***Mean***	***Standard deviation***	***Remarks***
Bedwetting children often smell badly	*4.95*	*1.09*	*Agreed*
Bedwetting makes children feel sad.	*4.84*	*0.94*	*Agreed*
It makes friends laugh at them.	*4.75*	*0.85*	*Agreed*
The child does not have respect from friends.	*3.94*	*1.41*	*Agreed*
The child doesn't go on holiday to relatives' homes.	*3.87*	*1.97*	*Agreed*
Friends don't like playing with them	*3.74*	*1.26*	*Agreed*
Parents/guardian gets angry when the children who bedwet	*3.28*	*1.10*	*Agreed*
People often embarrass children who bed wet.	*3.09*	*1.37*	*Agreed*
Bedwetting can cause skin rashes.	*3.07*	*1.30*	*Agreed*
The child loses interest in school.	*2.13*	*1.28*	*Disagreed*
It can make children perform badly in school.	*2.05*	*1.49*	*Disagreed*

3.4 Perceived effects of bedwetting on children

Table 4 shows the mean and standard deviation of the perceived effects of bedwetting on children. From the data, the respondents agreed that bedwetting children often smell bad (4.95±1.09), bedwetting makes children feel sad (4.84±0.94), it makes friends laugh at them (4.75±0.85), the child

does not have respect from friends (3.94±1.41), the child does not go on holidays to relatives' homes (3.87±1.97). However, two variables were disagreed by the respondents as effects of bedwetting which were; the child loses interest in school (2.13±1.28) and it can make children perform badly in school (2.05±1.49).

Enuresis often has a negative influence on children and is attributable to a mixture of family conflict, societal marginalisation, and therapeutic failures (Virtual Medical Centre, 2012). The findings of the study show that the children believe that bedwetting could make children smell bad, feel sad, and could lead to mocking, embarrassment and lack of respect from friends. It could also prevent the child from enjoying holidays in relatives' homes. The study by Iduoriyekewen et al. (2006) found that the self-esteem of children who wet their beds was significantly lower than that of children who did not wet their beds. Grzeda et al. (2017) similarly observed that peer victimization, problematic peer relationships and poor self-image were commonly experienced by children with enuresis. Another research of primary school-aged children discovered that bedwetting was the third most upsetting of 11 crucial life experiences (Neveus et al., 2006). For fear of bedwetting, these children are less likely to participate in social activities such as school camps, sleepovers, and family vacations (Virtual Medical Centre, 2012). Children who wet the bed may be concerned that their room smells of urine and may be reluctant about inviting friends over. This social isolation can be detrimental to their growth and development. However, two variables were disagreed by the respondents as effects of bedwetting which were; the child loses interest in school and it can make children perform badly in school. This indicates that bedwetting might not affect the academic performance of the children in this study.

Table 5: Bedwetting management strategies used by parents for their children

Strategies	***Mean***	***Standard deviation***	***Remarks***
Preventive strategies			
They don't allow the child to drink water or liquid at night.	*4.81*	*1.07*	*Agreed*
They wake the child at night to urinate	*4.57*	*0.79*	*Agreed*
They ensure the child urinates before going to bed.	*4.41*	*0.66*	*Agreed*
The child takes his supper early in the evening.	*3.81*	*1.21*	*Agreed*
They give the child a small quantity of food at night	*3.73*	*1.30*	*Agreed*
They use a waterproof cover for the child's mattress.	*3.26*	*1.65*	*Agreed*
They keep a bucket in the room for the child to use	*3.22*	*1.23*	*Agreed*
They set an alarm to wake the child	*3.16*	*1.21*	*Agreed*
They ensure someone follows the child to the toilet to urinate	*3.10*	*1.15*	*Agreed*
They ensure the child is well-protected during cold weather	*3.18*	*1.23*	*Agreed*
Curative strategies			
They use herbs/local remedies for the problem.	*3.93*	*1.34*	*Agreed*
They take the child to see a doctor because of bedwetting	*3.74*	*1.31*	*Agreed*
They give the child drugs recommended by a doctor	*3.73*	*1.30*	*Agreed*
They take the child for prayers/deliverance	*2.33*	*1.29*	*Disagreed*
Hygiene management strategies			
They make the child sleep on a mat	*3.88*	*1.32*	*Agreed*

They ensure the child cleans the room every morning	*3.60*	*1.28*	*Agreed*
They help the child to change wet clothes and bed sheets at night	*3.47*	*1.28*	*Agreed*
They make the child wash the wet clothes and bedsheets as soon as possible.	*3.44*	*1.26*	*Agreed*
Reinforcement strategies			
They beat the child any time he/she bed wets	*3.99*	*1.32*	*Agreed*
They reward/praise the child each time he/she does not bedwet.	*3.49*	*1.36*	*Agreed*
They make the child go without food as punishment for bed-wetting	*2.29*	*1.28*	*Disagreed*
They make the child sleep in the corridor/ veranda	*2.44*	*1.25*	*Disagreed*

3.5 Bedwetting management strategies used by parents for their children

Table 5 shows the mean and standard deviation of the bedwetting management strategies used by parents for their children. Among the preventive strategies, the respondents agreed that parents do not allow the child to drink water or liquid at night (4.81±1.07), they wake the child at night to urinate (4.57±0.79), they ensure the child urinates before going to bed (4.41±0.66), the child takes his supper early in the evening (3.81±1.21), and they give the child small quantity of food at night (3.73±1.30). Among the curative strategies, the respondents agreed that their parents use herbs/local remedies for the problem (3.93±1.34), that they were taken by their parents to see a doctor because of bed wetting (3.74±1.31) and they were also given drugs recommended by doctors to stop bed wetting (3.73±1.30). Among the hygiene management strategies, the respondents agreed that the child sleeps on a mat (3.88±1.32), the child cleans the room every morning (3.60±1.28), the child to change clothes and bed sheets at night (3.47±1.28). Among the reinforcement strategies, the respondents agreed that the child is beaten any time he/she bedwets (3.99±1.32) and the child gets reward/praise each time he/she does not bedwet (3.49±1.36). While some items such as the child is taken for prayers/deliverance (2.33±1.29), the child goes without food as punishment or bedwetting (2.29±1.28), and the child sleeps in the corridor/veranda (2.44±1.25) was disagreed by the respondent

The finding of the study showed that among the preventive strategies, the respondents agreed that parents do not allow the child to drink water or liquid at night, they wake the child at night to urinate, they ensure the child urinates before going to bed, the child takes his supper early in the evening, and they give the child small quantity of food at night. Among the curative strategies, the respondents agreed that their parents use herbs/local remedies for the problem, they take the bedwetting child to see a doctor because of bedwetting and they give the child the recommended drugs. This finding indicates that the parents of the children might be aware that bedwetting is not a deliberate act by children but a condition that requires medical solutions. Among the hygiene management strategies, parents make the child sleep on a mat which is easier to clean and dry than the mattress. Parents also ensure the child cleans the room every morning to avoid unpleasant smells, and they help the child to change wet clothes and bed sheets at night to prevent cold and skin irritation for the child. Among the reinforcement strategies, parents both use punishment and reward to encourage

dryness in the child. This indicates that parents of the children in this study might be applying the carrot and stick approach to managing childhood bedwetting. However, Kimberly-Clark (2022) noted that while rewards might work for toilet training, it is not usually effective in treating bedwetting, on the contrary, the use of rewards might heighten disappointment in children when they are not able to maintain dry nights. Radunovich and Evans (2021) recommend that punishment should not be used on children who bedwet as it might create more anxiety and hence worsen the problem. The study by Iduoriyekemwen and Nwaneri (2017) and Anyanwu et al. (2015b) similarly found that punishment, waking the child to urinate and using traditional medications were among the remedies sought by Nigerian parents for their bedwetting children. However, in contrast to the findings of the aforementioned studies, this study observed that many children reported that their parents seek medical advice and treatment for bedwetting problems. Bedwetting is a medical condition and although it can be naturally resolved in children as they grow older, it can be managed using certain recommended medications such as desmopressin (U.S National Library of Medicine, 2018). The most important purpose for treating enuresis is to reduce the child's shame and anxiety, promote their physical health, and minimize parents' worries (Robson, 2022), therefore, any strategy employed by parents should target achieving these purposes.

3.6. Policy Implications

The findings of this study have various implications. First, it could lead to informed healthcare guidelines for diagnosing and managing bedwetting in children. Unlike healthcare facilities in Western countries, there are limited health facilities and personnel in Nigeria dedicated to addressing childhood enuresis. This might contribute to poor understanding and consequent management of the problem. Second, it could influence school policies and public health campaigns to demystify bedwetting and reduce the stigma as well as encourage early intervention. The findings of this study also provide content for developing educational materials and support programs for children and their caregivers.

3.7. Limitations and suggestions for further research

This study's limitations lie basically in the fact that the quantitative and not qualitative methods of data collection were employed. Hence, general rather than in-depth information was obtained from the respondents. Further research is recommended on the use of qualitative approaches such as interviews and focus group discussions to obtain more individualized data.

4. Conclusion

Bedwetting is a major strain on both the affected child and their family. According to the findings of the study, the prevalence of bedwetting among respondents was comparable to earlier studies found in the literature. There were more males than females who bed wet and the majority experienced primary and nocturnal (nighttime) bedwetting. Some perceived risk factors of bedwetting include dreaming of urinating, drinking a lot of water/fluid and fruits before going to bed, laziness, cold weather and sickness/taking medicines. Bedwetting negatively affects children in such ways as making them have an offensive smell, sad feelings, mockery and loss of respect from friends, as well as the inability to enjoy holidays away from home. However, the children believe that their parents put

in much effort to assist them in achieving dry nights by seeking medical solutions and maintaining adequate home hygiene while enuresis lasts. It is important for Home Science extension workers to embark on parents' education and awareness programmes to sensitize parents on the risk factors and more effective strategies for managing enuresis. Hospitals and other health facilities should provide enuresis diagnosis and management services so that more parents can seek medical assistance from qualified health personnel. School authorities could also make out time within the school year, to create awareness and teach school children about enuresis to reduce the stigma and embarrassment faced by enuretic children among their peers.

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Conflict of Interest

There is no conflict of interest among the authors.

Authors' Contributions

UIN, CLU, and MNO were responsible for the study's conceptualization, methodology, writing, data gathering, analysis, and revision.

Data Availability Statement

The datasets used in this investigation are accessible upon request. Further questions should be directed to the authors.

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